

2000-2001 Sample Form
Mathematics
Scoring Key

Item #	Correct Answer	Cluster, Macro*	Knowledge Skill*	Problem Solving Skill*	Power Base Elements*
1	B	1A	06	10	Problem Solving, Numerical Operations, Estimation
2	D	2A	07	11	Problem Solving, Connections, Reasoning
3	B	3A	05	08	Problem Solving, Connections, Numerical Operations
4	D	4B	10		Reasoning, Numerical Operations
5	C	2B	11	12	Problem Solving, Communication, Reasoning, Tools/Technology
6	B	3B	09		Connections, Reasoning, Numerical Operations
7	A	2C	01	13	Problem Solving, Reasoning, Numerical Operations, Measurement
8	B	1A	04	10	Connections, Reasoning, Tools/Technology, Numerical Operations, Estimation
9	B	4B	11	13	Problem Solving, Connections, Reasoning, Tools/Technology, Numerical Operations
10	A	4A	06		Connections, Reasoning
11	A	4B	01		Problem Solving, Reasoning
12	B	1B	15	25	Problem Solving, Connections, Reasoning, Tools/Technology, Numerical Operations, Estimation
13	See rubric	1B	17		Communication, Reasoning, Numerical Operations
14	See rubric	2C	06	13	Problem Solving, Communication, Connections, Reasoning, Tools/Technology, Numerical Operations, Measurement
15	D	2B	11		Reasoning
16	B	4A	09	10	Problem Solving, Connections, Reasoning, Numerical Operations, Measurement
17	C	2B	02		Connections, Numerical Operations
18	C	3A	04		Connections, Numerical Operations
19	C	1C	05		Connections, Reasoning, Tools/Technology, Numerical Operations
20	C	1A	06	10	Problem Solving, Connections, Reasoning, Numerical Operations, Estimation
21	A	1B	04		
22	A	3A	04	08	Problem Solving, Connections, Numerical Operations
23	A	4B	06	17	Problem Solving, Connections, Reasoning
24	C	4A	09		Problem Solving, Connections, Reasoning, Numerical Operations
25	D	3B	06	11	Problem Solving, Reasoning
26	See rubric	3D	07	10	Problem Solving, Communication, Tools/Technology, Numerical Operations
27	See rubric	4B	08	14	Problem Solving, Communication, Connections, Reasoning, Tools/Technology, Numerical Operations
28	B	1B	13		Numerical Operations,
29	B	4A	09	10	Problem Solving, Connections, Reasoning, Tools/Technology, Numerical Operations
30	A	1A	04	10	Problem Solving, Numerical Operations, Estimation
31	C	3B	09		Reasoning, Tools/Technology, Numerical Operations
32	D	3C	09	14	Problem Solving, Reasoning
33	B	2C	10	13	Problem Solving, Reasoning, Numerical Operations, Measurement
34	B	4B	01		Problem Solving, Reasoning
35	A	1B	19	23	Problem Solving, Connections, Numerical Operations
36	A	2A	03		Reasoning
37	B	4B	08		Problem Solving, Reasoning, Numerical Operations
38	B	1C	04	08	Problem Solving, Reasoning, Numerical Operations
39	See rubric	3A	01	08	Problem Solving, Communication, Connections, Reasoning, Numerical Operations
40	See rubric	2C	10	13	Problem Solving, Communication, Connections, Reasoning, Tools/Technology, Numerical Operations, Measurement

Scoring Instructions

Official scores for open-ended items on a live test are derived from two independent readings of each student response. If you do not plan to use a second scorer, simply assign the same score twice. *Responses that are unintelligible, not in English, off topic, not responsive, or only a partial fragment are assigned a score of zero points.* If you have difficulty deciding on a score point or feel a particular response lies between two score points on the rubric, you may assign “split” scores (i.e., 2 and 3). Based on the item type, the two scores are either added together or averaged (which can result in half-points) in computing the total number of points earned.

To compute the total score, add the following:

- Count one point for each correct answer on all multiple-choice items. (maximum 34 points possible)
- Scores for open-ended items 13, 14, 26, 27, 39, and 40 (average of two scores for each item – minimum of 0, maximum of 3 points possible for each item or 18 maximum total points possible).

Total of 52 maximum points possible.

Clusters/Macros

1. Number Sense, Concepts and Applications.
 - 1.A. Make Appropriate Estimations and Approximations.
 - 1.B. Understand Numbers, Our Numeration System and Their Applications in Real-World Situations.
 - 1.C. Use Ratios, Proportions and Percents in a Variety of Situations.
2. Spatial Sense and Geometry.
 - 2.A. Recognize, Identify and Represent Spatial Relationships and Geometric Properties.
 - 2.B. Apply the Principles of Congruence, Similarity, Symmetry, Geometric Transformations and Coordinate Geometry.
 - 2.C. Apply the Principles of Measurement and Geometry to Solve Problems Involving Direct and Indirect Measurement.
3. Data Analysis, Probability, Statistics and Discrete Mathematics.
 - 3.A. Predict, Determine, Interpret and Use Probabilities.
 - 3.B. Collect, Organize, Represent, Analyze and Evaluate Data.
 - 3.C. Apply the Concepts and Methods of Discrete Mathematics to Model and Explore a Variety of Practical Situations.
 - 3.D. Use Iterative Patterns and Processes to Describe Real-World Situations and Solve Problems.
4. Patterns, Functions and Algebra
 - 4.A. Recognize, Create and Extend a Variety of Patterns and Use Inductive Reasoning to Understand and Represent Mathematical and Other Real-World Phenomena.
 - 4.B. Use Algebraic Concepts and Processes to Concisely Express, Analyze and Model Real-World Situations.

*Refer to the *Directory of Test Specifications and Sample Items for the Grade Eight Proficiency Assessment (GEPA) and the High School Proficiency Assessment (HSPA) in Mathematics*, published by the New Jersey Department of Education in February, 1998 for further information.

2000-2001 GEPA Sample Form Mathematics Score Interpretation Guide

The New Jersey Department of Education is pleased to provide the 2000-2001 GEPA Sample Forms as tools for gauging student achievement prior to the live administration of these tests. Although the sample forms contain previously tested items and are built to specifications *similar* to the “real” test, they are not the “real” test. As such, these sample forms are not intended to predict student scores on the GEPA. There are several reasons for this:

1. Student performance on these or any test will vary from day to day.
2. The sample forms will be given under less standardized conditions than the conditions used for the live tests.
3. The sample forms will be scored locally without the extensive training and accuracy controls used to score the live tests.
4. Continued instruction will occur in the time between the administration of the sample form and the live test.

However, these sample forms can be used to screen for students who may have difficulty reaching the Proficient level. Also, by examining items that a student or group of students (e.g., a classroom) answer incorrectly, teachers can identify possible strengths and weaknesses in specific skills. The scoring key provides links to the *Core Curriculum Content Standards* and the *Directory of Test Specifications and Sample Items* to help you understand the content, skill and process domains that each item represents.

Individual student performance on these sample forms can be interpreted as follows:

Level	Score Range	Indication
1	0 – 21.5	There is a good chance that the student would <u>not</u> score at the Proficient level.
2	22 – 31.5	There is a good chance that the student would score just above or just below the Proficient level cut-score.
3	32 – 52	There is a good chance that the student is at or above the Proficient level

The New Jersey Department of Education highly recommends that teachers use sample form results as only one piece of information when determining the instructional needs of a student or group of students.

2000-2001 GEPA Sample Test
Mathematics
Item 13 Scoring Rubric

3 points – The student plots and labels both points accurately, names a decimal and a fraction between 0.6 and 4/5 and clearly explains why the chosen numbers meet the requirement.

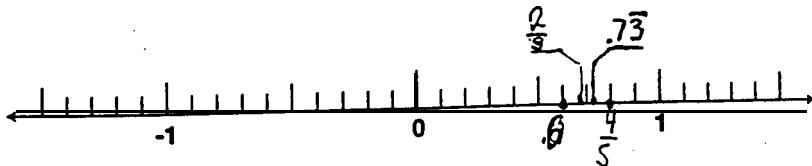
2 points – The student plots and labels both points accurately and names a decimal and a fraction between 0.6 and 4/5 but the explanation is vague, incomplete, or missing.

- OR The student plots and labels both points accurately and names either a decimal or a fraction with a clear explanation.
- OR The student fails to plot one or both points or plots them incorrectly but names a decimal and a fraction between 0.6 and 4/5 with a clear explanation.

1 point – The response fails to meet the requirements of a "2" but shows some evidence of understanding or begins to answer the question; for example, the student correctly plots and labels the two given points.

0 points – The response shows insufficient understanding of the problem's essential mathematical concepts.

15.



Both numbers are greater than .6

$$\frac{2}{5} > .6$$

$$\frac{7}{10} > .6$$

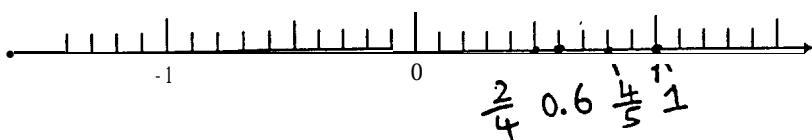
Both are less than $\frac{4}{5}$

$$\frac{2}{5} < \frac{4}{5}$$

$$\frac{7}{10} < \frac{4}{5}$$

Score: 3

16.



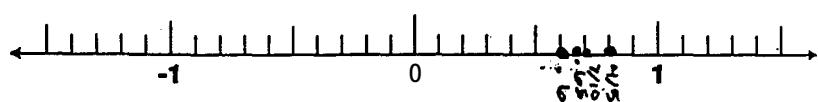
Because $1 - 0.6$ is equal 0.4 so I know
1 is greater than 0.6

Because $\frac{4}{5} - \frac{2}{4}$ is equal $\frac{3}{10}$ so I know
 $\frac{2}{4}$ is smaller than $\frac{4}{5}$.

That's how I figure out the answer

Score: 3

4.



Well, $.6\overline{5}$ is greater than .6, and $7/10$ is equal to .7 which is less than $4/5$ because $4/5$ is equal to .8.

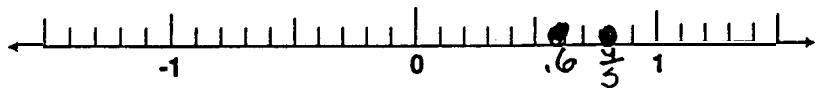
Score: 3

Item: 13

Score: 2

Sample #: 1 & 2

13.

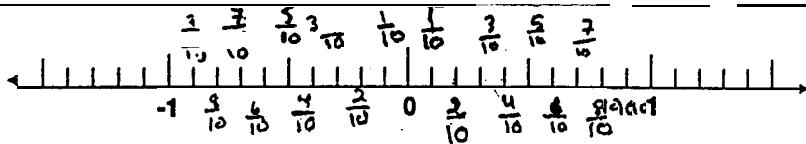


.75 .64

$\frac{4}{5} = .8$ so .75 and .64 are
in between the two
numbers

10.

Score: 2



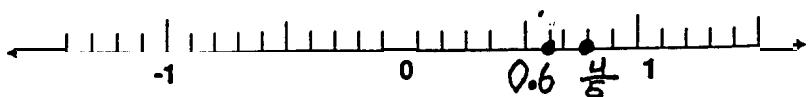
$$\frac{1}{5} = \frac{2}{10} \text{ so } \frac{4}{5} = \frac{8}{10}$$

$0.6 = \frac{6}{10}$ so use $\frac{1}{10}, \frac{2}{10}$ and so on

so $\frac{7}{10}$ comes
between

$\frac{6}{10}$ and $\frac{8}{10}$

12.

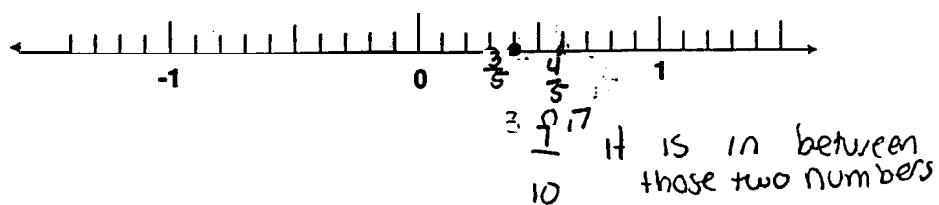


Two different rational numbers that are greater than 0.6 and less than $\frac{4}{5}$ are 0.7 and $\frac{7}{10}$.

I know that each of my numbers are greater than 0.6 and less than $\frac{4}{5}$ because 4 divided by 5 equals 0.8. So the only decimal that could be greater than 0.6 and less than 0.8 is 0.7. When I got 0.7 I figured that $\frac{7}{10}$ also equals 0.7 and that is how I got the numbers I did.

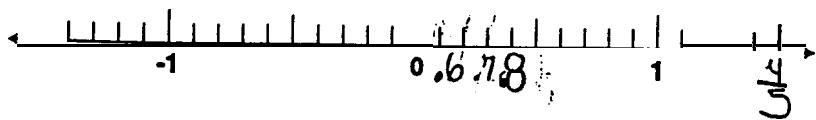
Score: 2

5.



Score: 1

6.



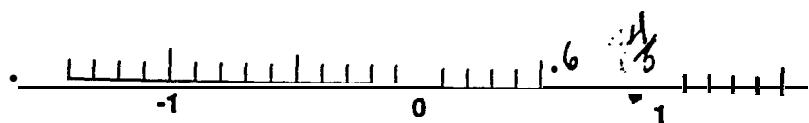
0.7
0.8

because .7 is one bigger than .6 but it is smaller than $4/5$

.8 is two bigger than .6 but smaller than $4/5$

Score: 1

8.



The numbers that are greater than .6
and less than $\frac{4}{5}$ are .7 and $\frac{3}{5}$ because
 $\frac{4}{5}$ comes out to .8 and $\frac{3}{5}$ comes out
to .6, so .7 and .8 are greater than .6
and less than $\frac{4}{5}$.

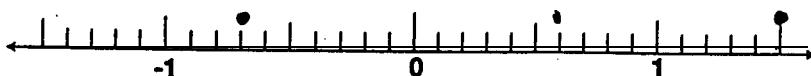
Score: I

Item: 13

Score: 0

Sample #: 1, 2 & 3

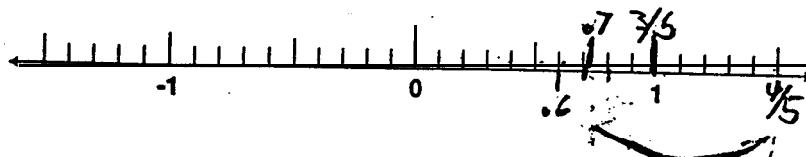
1.



I just figured it all up
and labeled it the best
I could.

Score: 0

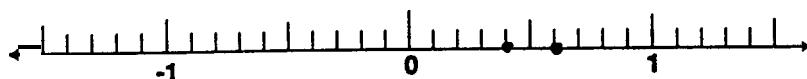
2.



They are in between

Score: 0

2.



Score: 0

2000-2001 GEPA Sample Test
Mathematics
Item 14 Scoring Rubric

3 points – The student finds area of 148 square yards. Diagram is clearly marked to show how floor was divided. For each section an appropriate formula is correctly used although actual work may not be shown. Diagram may be labeled with needed dimensions or their correctness may be determined from their use in the formulas. Any flaws are minor. (One mislabeled dimension or one computational error is considered a minor flaw.)

2 points – The student displays a reasonable method for finding the area but shows a pattern of errors in computation,

OR finds the area of one section inappropriately. (Includes both misapplication of a formula and failing to correctly determine a needed dimension.)

1 point – The response fails to meet the requirements of a "2" but shows some evidence of understanding or begins to answer the question; for example, correctly finds area of one subsection of floor.

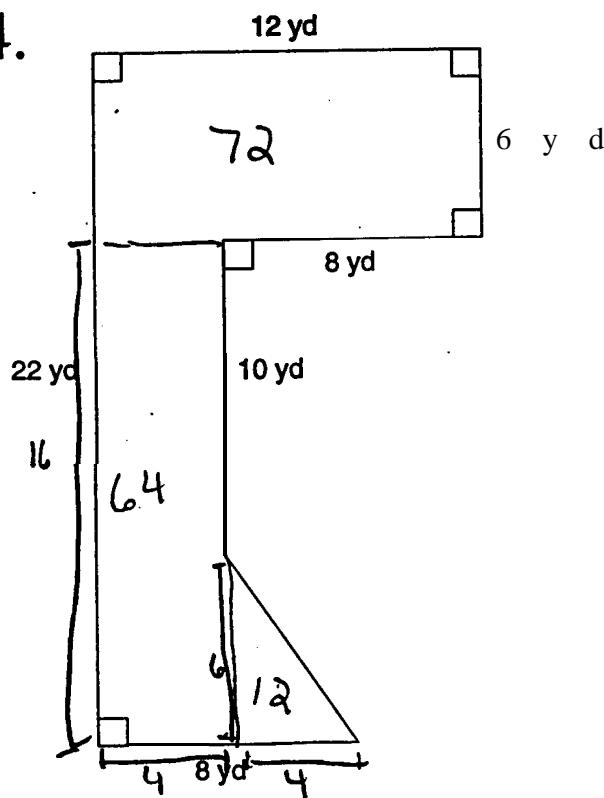
0 points – The response is irrelevant, inappropriate, or otherwise without merit.

Item: 14

Score: 3

Sample #: 1

14.



$$72 + 64 + 12 =$$

$$140 \text{ yds}^2$$

Score: 3

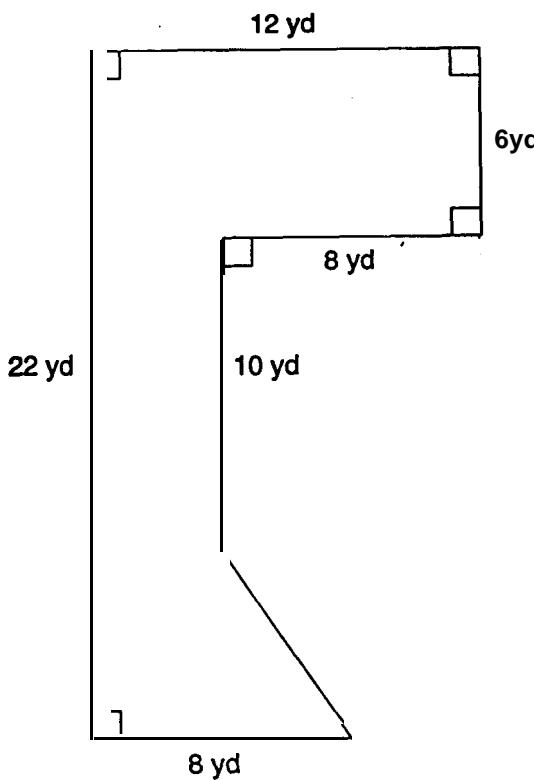
G-10

Item: 14

Score: 3

Sample #: 2

15.



$$\begin{array}{r}
 22 \text{ yd} \\
 \times 12 \text{ yd} \\
 \hline
 44 \\
 220 \\
 \hline
 264 \text{ sq. yds.}
 \end{array}$$

$$\begin{array}{r}
 - 80 \\
 \hline
 184 \\
 - 36 \\
 \hline
 148 \text{ sq. yds.}
 \end{array}$$

$$\begin{array}{r}
 10 \\
 \times 8 \\
 \hline
 80 = \text{square}
 \end{array}$$

$$\begin{array}{r}
 8 \\
 + 1 \\
 \hline
 12 = B^1 + B^2 \\
 \times 6 \\
 \hline
 72 = B^2 \times H \\
 \hline
 2 = 36 = \text{trapezoid}
 \end{array}$$

148 sq. yds. of vinyl needs
to be put down.

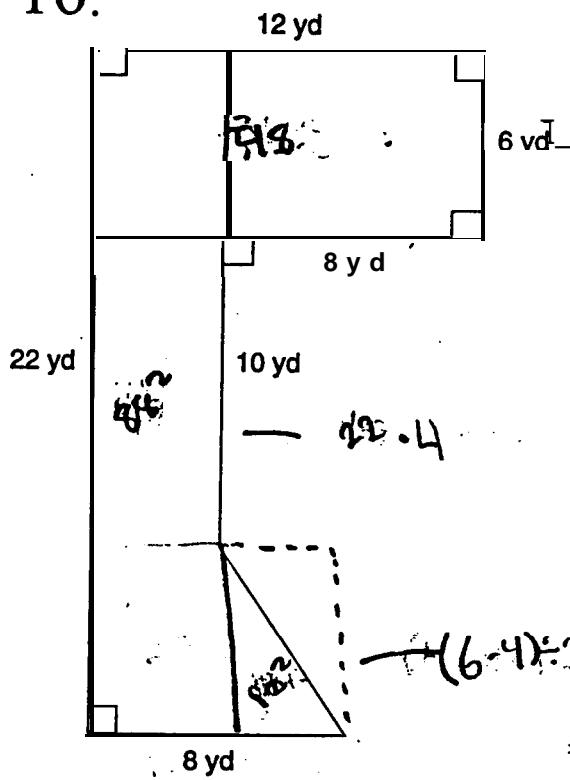
Score: 3

Item: 14

Score: 3

Sample #: 3

16.



16.8 yards² of vinyl flooring

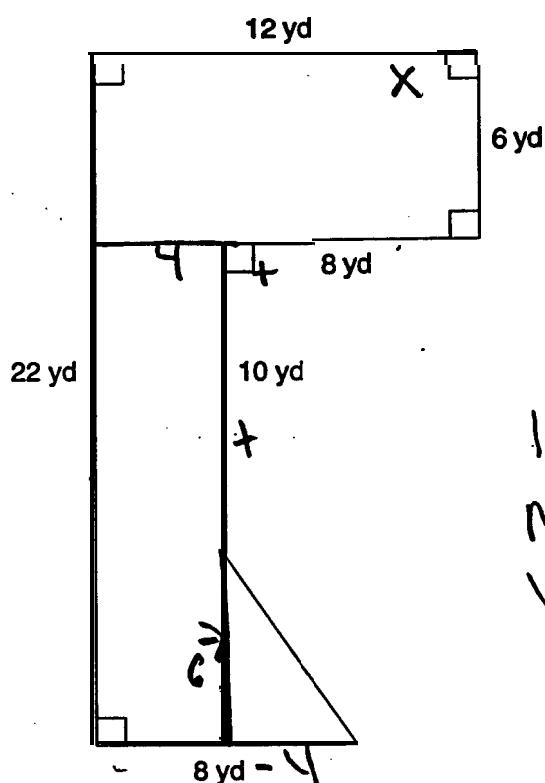
Score: 3

Item: 14

Score: 2

Sample #: 1

9.



$$\begin{aligned}12 \times 6 &= 72 \\22 - 6 &= 16 \\4 \cdot 4 &= 16 \\10 + 16 &= 16 \\16 \times 4 &= 64 \\6 \times 4 &= 24\end{aligned}$$

$\frac{72}{64}$
 $\frac{64}{48}$
 $\frac{48}{144}$

184 sq. yards are
needed to be covered with
vinyl flooring.

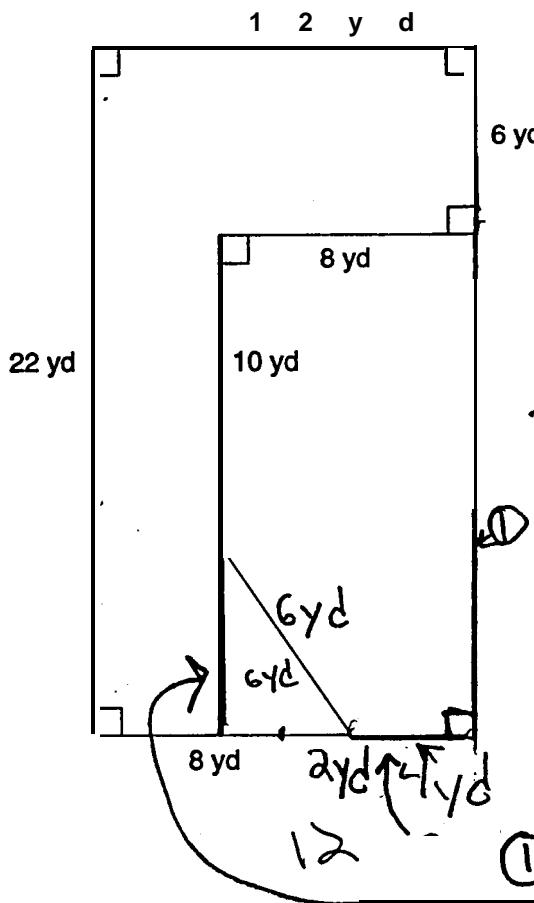
Score: 2

Item: 14

Score: 2

Sample #: 2

10.



$$6 \text{ yd} = 1 \text{ in.}$$

$$8 \text{ yd} = 1\frac{4}{3} \text{ in.}$$

22 yd
d

142 yds are needed to cover the area. First you fill in the whole shape. Then you find the area of the new shape (264). Then you find the area of the new triangle. You subtract the new triangle from the shape. You multiply 16×8 to get 128 then subtract 6 to get 122. You subtract 122 from 264 to get 142 yds.

$$16 \times 8 = 128 - 6 = 122$$

$$\begin{array}{r} 12 \times 24 = 264 \\ - 122 \\ \hline 142 \text{ yd} \end{array}$$

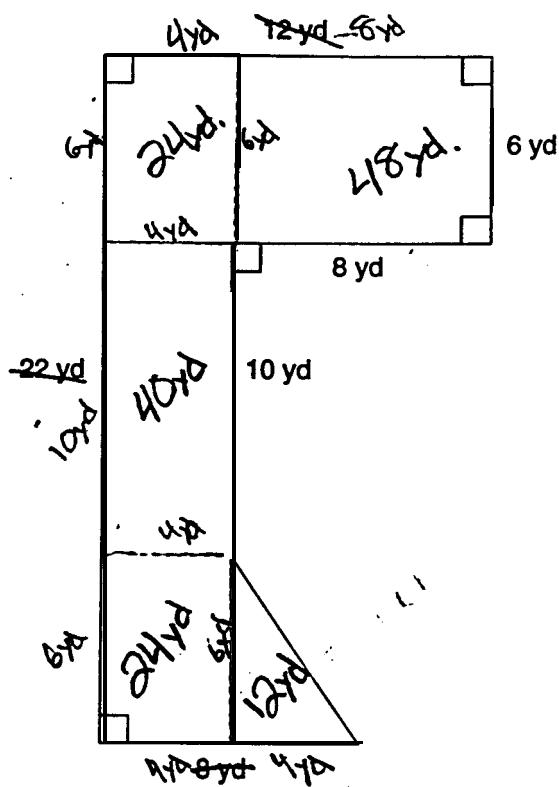
Score: 2

Item: 14

Score: 2

Sample #: 3

11.



The number of square yards needed is $49 \frac{1}{3} \text{ yd}^2$. I know this because you have to divide this floor plan into sections as I have done. Then, one must calculate how many yards are in each section. After labeling the sides, one must calculate the area. The total number of yards come to 148. One must then divide this number by 3 to equal the square yards. This comes to $49 \frac{1}{3} \text{ yd}^2$.

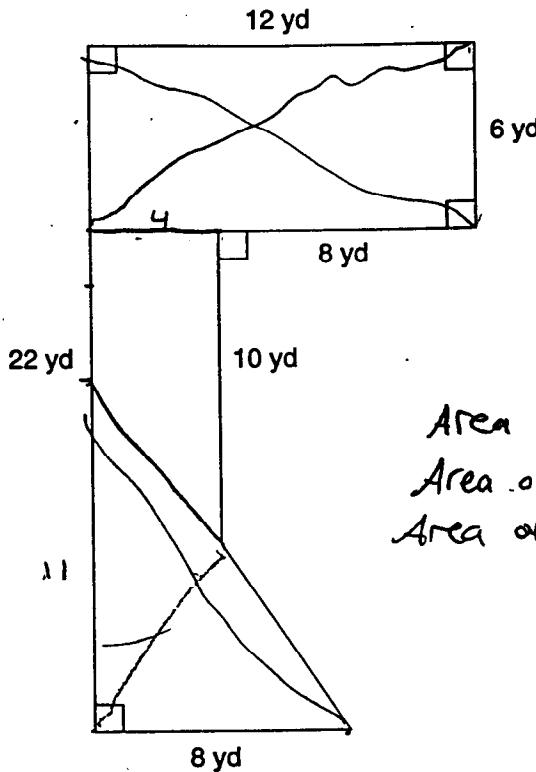
Score: 2

Item: 14

Score: 1

Sample #: 1 & 2

3.



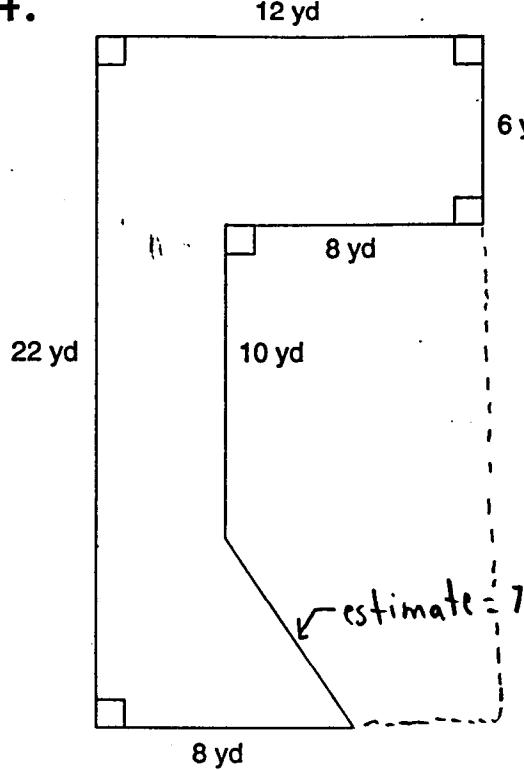
$$\text{Area of rectangle} = l \times w = 12 \times 6 = 72$$

$$\text{Area of Triangle} = b \times h \div 2 = 8 \times 6 \div 2 = 24$$

$$\text{Area of Parallelogram}$$

Score: 1

4.



$$6 \text{ yd} : 12 \times 22 - 264 - 8 = 256 - 10 = 239$$

$$p = 12 + 8 + 4$$

$$\text{Area Of floor} = 239 \text{ yds}$$

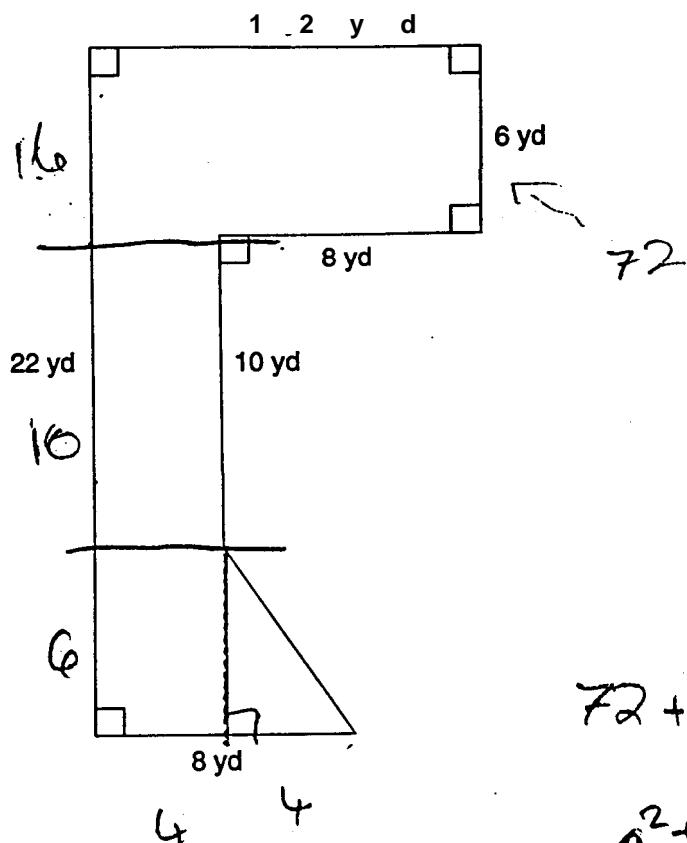
Score: 1

Item: 14

Score: 1

Sample #: 3

7.



$$72 + 24 + 40 + x$$

$$a^2 + b^2 = c^2$$

$$4^2 + 6^2 = c^2$$

~~$$16 + 36 = c^2 \quad 52 = c^2$$~~

First I divided the figure into 4 shapes. Then I found the area of each shape and added the areas together to get a total area of

$$143.21 \text{ yd}^2$$

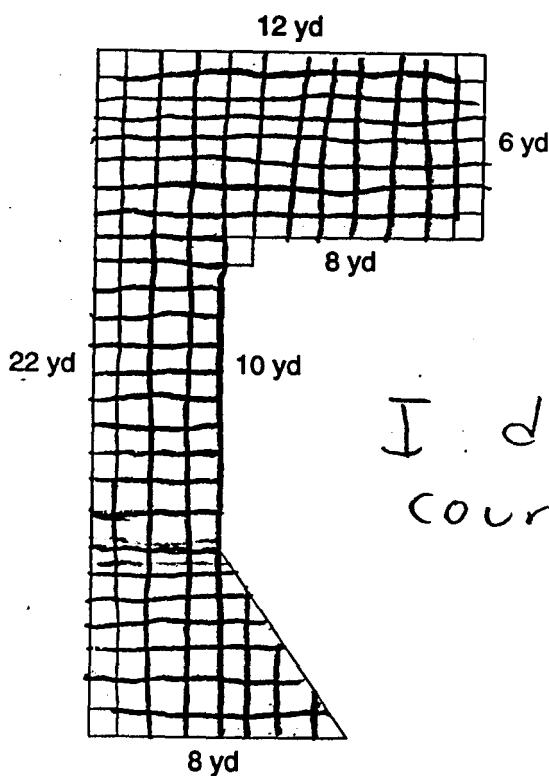
Score: 1

Item: 14

Score: 0

Sample #: 1 & 2

1.

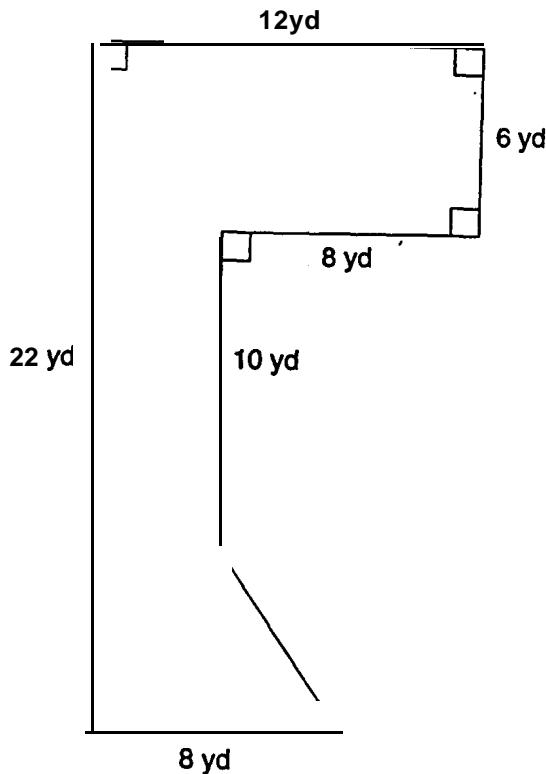


182 yds of flooring

I drew in the blocks and counted,

Score: 0

2.



$$\begin{array}{r} 12 \\ 6 \\ 8 \\ 10 \\ + 22 \\ \hline 66 \end{array}$$

sq ft

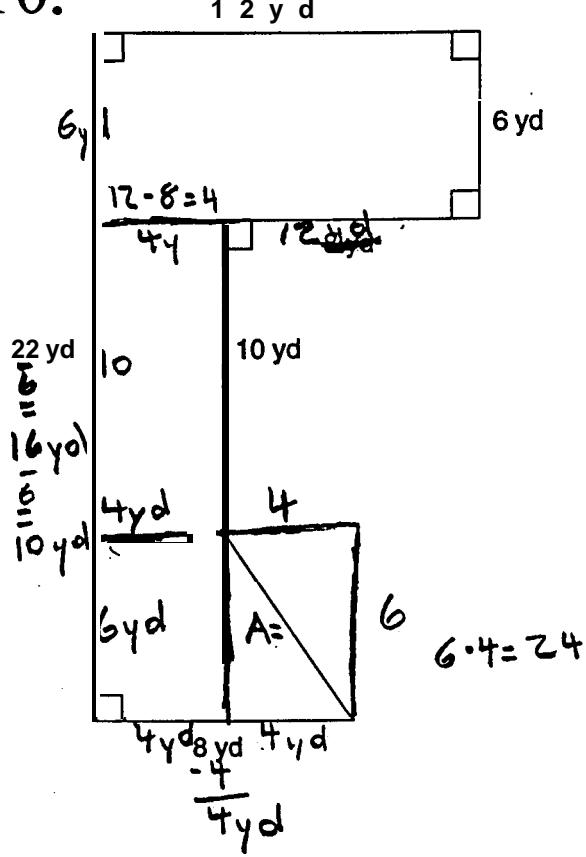
Score: 0

Item: 14

Score: 0

Sample #: 3

10.



Score: 0

P-7

**2000-2001 GEPA Sample Test
Mathematics
Item 26 Scoring Rubric**

3 points – The student uses a correct strategy to find the correct time (1:00) at which Amy can buy the coat. The explanation is clear and complete. The response may have a minor computational error.

2 points – The student states that Amy can buy the coat at 1:00. The explanation is vague but shows that the student knows how to calculate successive price reductions of 10%. The response may have minor errors.

1 point – The student shows some understanding of reducing prices by 10%, but the response may have major errors.

0 points – The response shows insufficient understanding of the problem's essential mathematical concepts.

Item: 26

Score: 3

Sample #: 1 & 2

10.

1:00 PM

I multiplied \$65 by .9 because if you have 10% off you only pay for 90% of it every hour is a new price, I kept multiplying by .9 until the number was below. Then I counted the number of times I multiplied, made them into hours and added

Score: 3

G-5

13.

$$\begin{array}{r}
 65 \\
 - 6.50 \\
 \hline
 \del{58.50} \\
 - 5.85 \\
 \hline
 52.73 \\
 - 5.27 \\
 \hline
 47.46 \\
 - 4.74 \\
 \hline
 \$42.72
 \end{array}
 \quad
 \begin{array}{r}
 58.50 \\
 \times .10 \\
 \hline
 5.85
 \end{array}
 \quad
 \begin{array}{r}
 52.73 \\
 \times .10 \\
 \hline
 5.273
 \end{array}
 \quad
 \begin{array}{r}
 47.46 \\
 \times .10 \\
 \hline
 \end{array}$$

Amy will be able to buy the coat in 4 hours at the price of \$42.72. This is possible by taking 10 percent off the Dorians price every hour.

Score: 3

G-7

11.

10% discount
\$65.00 decreases
10%
Every hour

Time	Price
9:00	\$65.00
10:00	\$58.50
11:00	\$52.65
12:00	\$47.35
1:00	\$42.64

ANSWER

Amy can
buy the dress
at 1:00 p.m.
for \$42.64

Score: 3

7.

- Amy will buy the coat at 1:00 PM
- I got this because you multiply every hour that passes the price of the coat by .1 until you get to the hour that the price is \$46 or less,

Score: 2

G-3

9.

$$\begin{aligned}10:00 - 58.50 \\11:00 - 52.70 \\12:00 - 47.50 \\1:00 - 42.80\end{aligned}$$

At 1:00 PM Amy can buy the coat for only 42.80. I worked this problem out by taking the first price and subtracting 10% each time.

Score: 2

8.

	0	65	46
1 hr		x .1	
2 hr		58.5	
3 hr		52.65	
4		47.385	
5		42.6465	
6			

Amy will be able to buy the coat at 2:00 pm. I took 65 and put 0 hr. Then I made a table of hours and for each hour I times .1 to the number above to get the cost for the next hour. I did that and at the 4th hr. The price was 47.385 so I times that by .1 and got 42.6465 and so that is under \$46 which Amy has. So at 2:00 pm Amy will be able to buy the coat and still have money left over.

Score: 2

GEPA Mathematics

4.
$$\frac{x}{65} = \frac{10}{100}$$

Item: 26**Score:** 1**Sample #:** 1, 2 & 3

$\frac{650}{100} = 6.5$ She will be able to buy
the coat at 12:00pm for
\$ 45.50.

$$\begin{array}{r} 58.5 \\ - 6.5 \\ \hline 52 \\ - 6.5 \\ \hline 45.5 \end{array}$$

Score: 1

5.

12:00 P.M. She will be able to buy the coat.

I found 10% of 65 then subtracted that number until it reached \$46 or less.

Score: 1

6.

Amy would have to wait 3 hours because by that time it will be 30% off and only cost \$45.5. I multiplied \$65 * .30 for the percent and the answer was \$19.5 and since Amy only had \$46 she could buy it.

Score: 1

Item: 26

Score: 0

Sample #: 1 & 2

1. She will have her coat at 11:00 a.m. and the total will be \$45.00

Score: 0

2.

$$\begin{array}{r} 65 \\ - 10\% \\ \hline + 9 \end{array} \text{ £60 a m}$$

$$\begin{array}{r} 54.9 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 54.8 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 54.7 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 54.6 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 54.5 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 54.4 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 54.3 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 54.2 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 54.1 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour } 6:00 \text{ pm}$$

$$\begin{array}{r} 54.0 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 53.9 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 53.8 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour}$$

$$\begin{array}{r} 53.7 \\ - 10\% \\ \hline \end{array} > 1 \text{ hour } 10:00 \text{ pm}$$

$$\begin{array}{r} 53.6 \\ - 10\% \\ \hline \end{array}$$

Score: 0

3.

She should be able to buy the coat at 1.00 because the price is \$65 at 9.00 and each hour the price goes down 10% and at 1.00 the price will go down so she could buy her coat

Score: 0

2000-2001 GEPA Sample Test
Mathematics
Item 27 Scoring Rubric

3 points – The student provides a complete response, clearly describing how column D is derived from C ($d = 3 \times C$) and how F is derived from D and E ($F = D \times E$), giving the correct numbers in one row of the table based on the numbers in column C doubling, and stating that the numbers in columns D and F would double if the numbers in column C doubled.

2 points – The student provides a nearly complete response in which 1 part of the question may be missing or incorrect.

1 point – The student describes how at least one of the columns D or F was derived using words or formulas. (Just using numbers is not sufficient).

OR The student shows some understanding of how entries in the spreadsheet affect other entries.

0 points – The response shows insufficient understanding of the problem's essential mathematical concepts.

Item: 27

Score: 3

Sample #: 1 & 2

12.

Selling price is 3 times as much as unit price

$$F = E \cdot D$$

A	B	C	D	E	F
Economy	1000	.24	.72	\$40	\$388.80

Everything went up

Score: 3

13.

$$\text{selling price} = \text{unit cost} \cdot 3$$

$$\text{amount received} = \text{selling price} \cdot \text{no. sold}$$

A	B	C	D	E	F
Economy	500	\$0.24	\$0.72	270	\$194.40

They were doubled also.

Score: 3

Item: 27

Score: 3

Sampl #: 3

15.

- (A) When the transfer occurs she uses $.27 \text{¢} \times 3 = .81 \text{¢}$
- $X 4 \cdot | 3 | = Y$
~~Unit cost used to multiply by 3 = selling price~~
- (B) Takes the selling price and multiplies by ~~price amount sold~~
- (C) changing \$2.25 to \$4.50 \times by 3 = $13.50 + 15 = 202.50$
- (D) if all doubled - $13.50 - 4.50$ 202.50
 101.25

Score: 3

G-9

Item: 27

Score: 2

Sample #: 1 & 2

9.

$$D = C \cdot 3$$

$$D \cdot 3 = \$7.20$$

$$G = .14$$

$$D = T2$$

$$D \times E = 194.4$$

it doubled

Score: 2

10.

The unit cost is the actual price of the pens and the selling price is what Ms. Jones is selling them as.

The amount received depends on No. Sold and the selling price to know how much is received.

	<u>unit cost</u>	<u>selling price</u>	<u>amt. sold</u>
Bent	\$4.50	\$13.50	20Z.50

The selling price and amount sold were also doubled.

Score: 2

Item: 27

Score: 2

Sample #: 3

11.

① The selling can calculate the unit price by dividing the selling price by $\frac{1}{3}$.

② Column F is calculated from the other columns because if you multiply column D by column E you will get the amount received.

$$.36 \cdot 270 = \$97.20$$

A	B	C	D	E	F
Economy	500	.124	.72	270	\$194.40

③ The selling price was tripled because the unit cost was doubled and since the selling price was tripled it caused the amount received to double also.

$$\begin{array}{r} .24 \\ \times 3 \\ \hline .72 \end{array} \cdot 270 = \$194.40$$

$$\begin{array}{r} + 194.40 - \text{after} \\ - 97.20 - \text{before} \\ \hline \$97.20 \end{array}$$

Score: 2

4.

She Multiplys Unit cost $\times 3$, To get selling price.
That is how much she got for them.

Score: 1

5.

She wants to make a profit so .

If the unit cost rises, she
will have to rise how much
she sells them for.

If she raises the prices, she
will have received more money..

Economy	Sellin cost,	Sellin	Amt. received
	.24	.48	@ 129.00

As the selling price double , so
does everything else does , too .

6.

- $\frac{.12}{.36} = .33 = 33\% \text{ increase}$
- The amount received depends on the amount sold and the selling price

A	B	C	D	E	F
Best	525	6.75	20.25	45	911.25

- The prices were doubled

Score: 1

Item: 27

Score: 0

Sample #: 1 & 2

1.

- multiply by 100
- 100×270
- Then reduce.

- that went up

Score: 0

2.

- Mrs. Nuney changes the price of D by adding the remaining to D from C.
- Also column F gets the remaining.

A	B	C	D	E	F
Better - 400	.17	.60	.17		

- Amt. go + what was left over,

Score: 0

Item: 27

Score: 0

Sample #: 3

3.

Handwritten addition problem:

$$\begin{array}{r}
 \$0.12 \text{ C.C} \\
 + \$0.88 \\
 + \$2.25 \\
 \hline
 \$2.65
 \end{array}
 \quad
 \begin{array}{r}
 \text{CD } \$0.36 \\
 + \$0.24 \\
 + \$6.75 \\
 \hline
 \$7.95
 \end{array}
 \quad
 \begin{array}{r}
 \text{L.F. } \$97.20 \\
 + \$160.44 \\
 + \$101.25 \\
 \hline
 \$358.89
 \end{array}$$

Diagram showing the addition process in five steps:

- Step 1:** Shows the first three addends: \$0.12, \$0.88, and \$2.25, with a total of \$2.65.
- Step 2:** Shows the second three addends: CD (\$0.36), \$0.24, and \$6.75, with a total of \$7.95.
- Step 3:** Shows the third three addends: L.F. (\$97.20), \$160.44, and \$101.25, with a total of \$358.89.
- Step 4:** Shows the sum of Step 1 plus the sum of Step 2: \$2.65 + \$7.95 = \$10.60.
- Step 5:** Shows the sum of Step 3 plus the sum of Step 4: \$358.89 + \$10.60 = \$369.49.

Score: 0

2000-2001 GEPA Sample Test
Mathematics
Item 39 Scoring Rubric

3 points – The student states that Bob is wrong (or that each person has an equal chance of winning), that Sandra is wrong (or that it is more likely that someone from Sales will win than someone from Credit) and gives clear, complete explanations of both statements.

2 points – The student states that Bob is wrong and that Sandra is wrong. One explanation is clear and complete. The other explanation is vague, incomplete, or missing, but not incorrect, contradictory, or irrelevant.

1 point – The response fails to meet the requirement for a 2, but shows some understanding of probability and/or fairness.

0 points – The student states that both Bob and Sandra are wrong, but explanations are missing or do not show understanding.

OR The response shows insufficient understanding of the problem's essential mathematical concepts.

12.

No, it is every employee from every department.
It doesn't matter what department you're
from, etc.

Sandra is wrong because there are more
people in Sales so someone in Sales would
have a better chance at winning than
someone from Credit.

Score: 3

14. Bob is not correct, because they
are picking from the whole store
not just from departments.

No, it is four times more
likely for someone from Sales
to win than from Credit because
Sales has 12 and Credit has

Score: 3

3.

15. No, bob is not correct because all of the employees are put into a hat and chosen.

No, Sandra isn't correct because probability shows that credit has a $\frac{3}{50}$ chance of winning. Sales has a $\frac{12}{50}$ chance of winning, which is greater than the credit department.

Score: 3

8. ① Bob is incorrect. Only one person is drawn. Not one person from every department.

② Sandra is incorrect. Since Sales has a larger number than Credit, ~~there~~ ^{it} is more likely that a Sales person will win

Score: 2

GEPA Math

Item: 39

Score: 2

Sample #: 1 & 2

10. Sandra is ~~correct~~ because there is only 1 grand prize. There is ~~not~~ a prize for each department. Everyone has a 1 out of 50 chance.

Sandra is incorrect that it is 4 times more likely for someone from credit to win than someone from Sales. Out of 50 people there are only 3 people in Credit. $50 - 3 = 47$, so there is a 1 out of 47 chance that someone from Credit will win. $50 - 12 = 38$, so there is a 1 out of 38 chance that someone from Sales will win. There are 12 people in Sales, so there is a greater chance that someone from Sales will win.

Score: 2

Item: 39

Score: 2

Sample #: 3

11. a) No, Bob is not more likely to win. Since the numbers are not drawn by department it makes no difference how many people work in each department.
- b) 3 in credit 12 in sales No, Sandra is not correct. Sales would be 4 times more likely to win than Credit, since there are four times as many employees.

Score: 2

6. No, Bob is not correct. This is because all of the index cards are all together. In other words, the departments are all together. Each person has $\frac{1}{50}$ chance of winning the grand prize. That is why Bob is correct.

No, Sandra isn't correct. This is because everyone, from every department, has the same exact chance of winning.

Score: 1

GEPA Math

Item: 39

Score: 1

Sample #: 1 & 2

7. Part 1: No Bob is wrong. The drawing will be with all of the employees in the Separated departments, but Bob has to deal with inventory and Purchasing as well.

Part 2: Yes. The amount of people in credit is 3. The amount of sales people is 12. $4 \times 3 = 12$.

Score: 1

4.

No they all have the same
chance cause they all
puttin in one card

Score: 1

Item: 39

Score: 0

Sample #: 1 & 2

1. Bill is correct.

There are 3 in credit = $1/3$ = he has
a $33\frac{1}{3}\%$ chance of winning

Yes Sandra is correct. $3/12 = 25\%$.
Percent chance $25 \times 4 = 100$ or
 $3 \times 4 = 12$ 

Score: 0

2. Yes Bob is correct because he is 1 out of 3,
and Sarah is 1 out of 12.

No Sandra is not correct because first
of all, only one card can be picked,
and second of all, there are not
enough people in Credit.

Score: 0

Item: 39

Score: 0

Sample #: 3

3. Yes, Bob is more likely to when because their is less people from credit.
- Yes, Sandra is right. She is right because there is four times as many people in sales than credit.

Score: 0

2000-2001 GEPA Sample Test
Mathematics
Item 40 Scoring Rubric

Sample Answer – 08MMGJ188O

Volume = $3 \times 8 \times 12 = 288$ cu. in.

Surface area = $2(3 \times 8 + 3 \times 12 + 8 \times 12) = 312$ sq. in.

A new box can be 8 in. by 6 in. by 6 in.

Volume of new box: $8 \times 6 \times 6 = 288$ cu. in.

Surface area of new box: $2(8 \times 6 + 8 \times 6 + 6 \times 6) = 264$ sq. in. < 312 sq. in.

Other solutions include 4 x 6 x 12, 4 x 8 x 9, etc.

3 points – The student correctly computes the volume and surface area of the original box and state the dimensions of a box that has the same volume but less surface area. Any flaws are minor.

2 points – The student uses correct techniques to find both the volume and surface area of the original box and makes some attempt to design a new box.

1 point – The student uses a correct technique for finding either the volume of the box or the area of at least one of its sides.

0 points – The response is irrelevant, inappropriate, or otherwise without merit.

Item: 40

Score: 3

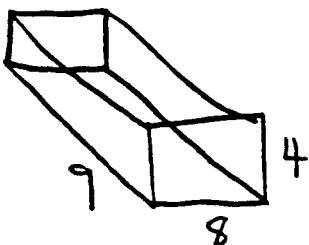
Sample #: 1 & 2

7.

$$12 \cdot 8 \cdot 3 =$$

288 in^3 is the volume

$$2(8 \cdot 3) + 2(8 \cdot 12) + 2(3 \cdot 12) = 312 \text{ in}^2 \text{ is the surface area}$$



$$9 \cdot 8 \cdot 4 = 288 \text{ in}^3$$

$$2(9 \cdot 8) + 2(8 \cdot 4) + 2(4 \cdot 9) = 280 \text{ in}^2$$

Less surface area but the same volume

Score: 3

11.

The volume of this box is 288 in^3 . You get that by length \times width \times height $12 \times 8 \times 3 = 288 \text{ in}^3$.

The surface area of the box is 312 in^2 , you get this by finding the area of all the sides. $(12 \times 8 \times 2) + (12 \times 3 \times 2) + (8 \times 3 \times 2)$ when you add them, I multiply those sides by 2 so I could get the area of the opposite side on the square without doing one extra step.

A box with the dimensions 6 in by 6 in by 6 in has a volume of 288 in^3 . $6 \times 6 \times 8 = 288$ and a surface area of 264 in^2 . $6 \times 6 \times 2 + 2 \text{ sides of } 6 \times 6 \text{ areas}$

$+ 6 \times 8 \times 4$ for sides of 6×8 areas
 $\underline{264 \text{ in}^2}$ it is smaller than 312 in^2

Score: 3

Item: 40
Score: 3
Sample #: 3

6.

WORK

$$12 \times 3 \times 8 = 288 \text{ Volume}$$

$$2 \times 3 \times 8 +$$

$$2 \times 3 \times 12 +$$

$$2 \times 8 \times 12$$

$$\underline{48 + 72 + 192}$$

Surface Area

312

Possibilities

$$12, 8, 3 = 312$$

$$12, 6, 4 = 312$$

$$12, 12, 2$$

$$12, 7, 4$$

The volume of the box is 288.

The surface area is 312.

The dimensions of a box with the same volume but smaller surface area is 12, 6, 4. I know this is correct because that surface area is 288, and all other surface areas were greater.

Score: 3

Item: 40

Score: 2

Sample #: 1 & 2

9. The volume of the box is 288 in^3 . The surface area is 312 in^2 . I found the volume by using the formula $L \times W \times H$. $12 \times 3 \times 8 = 288$ and in^3 is used with volume. I found the surface area by finding the area of the 3 sides facing you on the diagram. 36, 24, and 96 were the sides. And since there are two of each sides I times each side by 2 then add the numbers together. I then got 312 and in^2 is used in area.

Score: 2

10. Volume of a ~~rectangle~~ prism equals known.

$$50.12'' \times 8'' \times 3'' = 288 \text{ inches}^3$$

$$\text{Surface area} = l \cdot w \quad 50.12'' \times 8'' = 96 \text{ in}^2$$

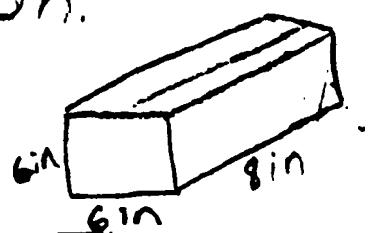
New dimensions:

length width height

8 in. ; 6 in. ; 6 in

$$8 \text{ in} \times 6 \text{ in} \times 6 \text{ in} = 288 \text{ in}^3$$

↓
↓
less surface area



some volume

Score: 2

GEPA Math**Item:** 40**Score:** 2**Sample #:** 3

'5.

$$12 \times 8 \times 3 = V = 288$$

$$96 + 96 + 36 + 36 + 24 + 24 = SA = 312$$

Score: 2

$V = \text{volume}$
$SA = \text{surface area}$

Item: 40

Score: 1

Sample #: 1 & 2

1. The formula to find the volume of the box is $V = Lwh$. ($L \times w \times h$) You substitute 12 in. for the length, 8 in. for the width, and 3 in. for the height. Now you have: $V = 12 \cdot 8 \cdot 3$. It equals 288. The volume is 288 in^3 . (Always cube volume)

The formula to find surface area $A = Lw$. ($\text{length} \times \text{width}$) Substitute 12 in. for the length, and 8 in. for the width. (12×8) Your answer is 96 in.^2 . (Always square area)

To find the dimensions of a box that has the same volume but less surface area, you keep the same volume (288 in^3) and just pick smaller dimensions for the length and width. The length and width is now 12 and 8, but to get a smaller surface area, pick something smaller like 6 in. and 2 in., also multiply 6 and 2 and you get $12 \cdot 12 \text{ in.}^2$ is a smaller surface area.

S... |

2. The volume of this box is 624 in.^3 . The surface area of this box is 312 in.^2 . And the dimensions of a box with the same volume and less surface area would be 12" by 8" still. I got this by multiplying the sides shown below.

$$8 \times 3 = 24 \rightarrow 2 \text{ sides}$$

$$8 \times 3 = 24$$

$$12 \times 3 = 36 \rightarrow 2 \text{ sides}$$

$$12 \times 3 = 36$$

$$12 \times 8 = 96$$

$$12 \times 8 = 96 \rightarrow 2 \text{ sides}$$

$$\underline{312 \text{ in.}^2}$$

S... |

Item: 40

Score: 1

Sample #: 3

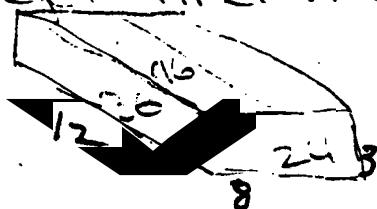
8.

The volume of the box is 36

I multiplied the length
and height to find the volume.

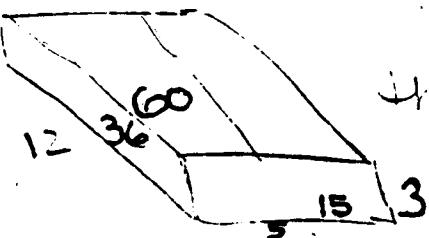
The surface area of the box is

156 in². I multiplied all of the
dimensions to get find the surface
area EX. →



$$\frac{96+24+36}{156} =$$

EX



Now, I did the same
thing and got 11 in²
The surface

Score: 1

Item: 40

Score: 0

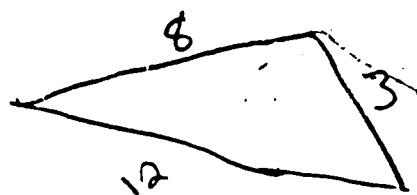
Sample #: 1 & 2

3.

$$\begin{array}{l} \text{volume} = 32 \\ \text{surface} = 64 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ + 8 \\ \hline 96 \\ \hline 96 \div 3 = 32 \end{array}$$

$$\begin{array}{r} 8 \\ \times 8 \\ \hline 64 \end{array}$$



Score: 0

4.

The value of the day is 7 grams. I got this answer by adding and subtraction.
 The surface is 19 grams. I got this answer by adding the sides together.

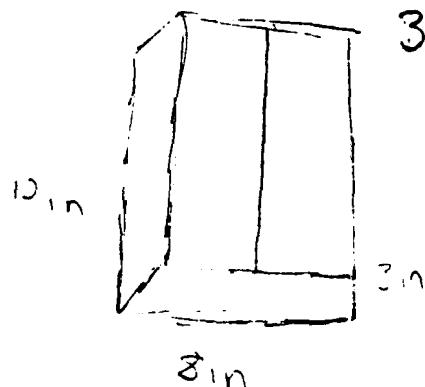
Score: 0

G3

5.

$$12+8+3=23$$

By adding It has to be a smaller
book to have the volume less;



Score: C